

uncertainty as to the amount of this damage that renders it impossible to figure out the exact loss.

If we look back to the old records, before the Government established the Signal Service or Weather Bureau, we will find that the damage from premature freezes of this kind brought overwhelming ruin to the cane crop, and that in many years the crop was injured three-fourths and more. The planters had nothing to guide them as to the weather, no notice of the coming of a freeze until it was on them. To-day, because we know more of the weather, the loss is not likely to be over 15 per cent.

It is difficult to appreciate how much these weather forecasts mean to the cane growers, for perhaps no crop is in greater danger from sudden temperature changes than sugar cane. Both of the recent freezes were sudden. The wind which carried the cold wave of November 13 to the sugar belt was blowing 40 to 50 miles an hour. It was impossible, therefore, to predict the freeze more than 40 hours in advance; but these 40 hours given the sugar planters to prepare were invaluable and saved Louisiana from millions of dollars of loss. The second freeze was predicted, or rather announced, two days in advance of its arrival, and gave the planters ample time to get ready for their enemy. These warnings permitted the saving of the greater part of the crop, and were valuable not only for the present but for future years, for they enabled the planters to save the seed cane. But for them we would have had to reduce our cane acreage next year.

The country correspondents of the Louisiana Planter furnish some valuable information on this point. Thus from Iberville we learn that a majority of the planters heeded the warnings at once, and began to windrow the moment the Weather Bureau informed them a cold wave was on its way here, and they thus saved their crop.

In Assumption a number of planters did not believe the warning, and will lose heavily in consequence of their failure to windrow. But the strongest evidence comes from Lafayette, where the Planter's correspondent remarks:

"Fortunately the United States Weather Bureau gave timely warning of the coming freeze, and those planters who had standing cane were able to put it in windrows before the cold blast struck. A few, however, were caught, not fully appreciating the warning, and trusting to luck that after all Uncle Sam's prediction as to destructive cold approaching might not come true. It is, therefore, quite certain that there will be some further loss, not only of standing cane, but of much exposed in heap rows."

Probably next time they will give better heeding to these warnings. The weather reports have vindicated themselves and proved their value; and with this protection and notice properly utilized by the planters the cane crop will be better protected against sudden changes in weather conditions and the crop made more certain. The Weather Bureau in its predictions, especially as far as freezes go, has made great progress in the last few years, and we may hope for still further improvement as the science of meteorology progresses.

#### ABNORMALITIES OF NOVEMBER WEATHER AT SPRINGFIELD, MO.

By JOHN S. HAZEN, Local Forecaster.

Abnormally high barometric pressure prevailed during the first of the month and on November 2 a reduced pressure reading of 30.83 inches was recorded, breaking the record for high barometric pressure during the past 25 years in the month of November.

A comparatively rapid decline followed, until the 5th of the month. This rapid fall of pressure resulted in an unusual elimination of diurnal temperature changes. The temperature at Springfield rose steadily from 2 a. m. of the 5th to 6 a. m. of the 6th. A comparison of the records of temperature from Bentonville, Ark., and Iola and Topeka, Kans., indicates similar conditions over a

considerable area, although the records from outside stations do not show as pronounced a change in temperature conditions as is shown by the records at Springfield. On November 11, a pressure, reduced to sea level, of 29.33 inches occurred, which breaks the record for low pressure during the month of November. This reading was followed by a rise in pressure of 1 inch in about 17 hours. On the 11th, cloudy weather prevailed during the early morning, but cleared for a short time before noon. By 2.30 p. m. the sky was again overcast by cirrus and alto stratus clouds, moving rapidly from the southwest, while a dense greenish black bank of clouds was rising along the western horizon, moving gradually to the northwest. By 3.30 p. m. dark and ominous appearing clouds extended along the northwestern horizon and at 3.45 p. m. this cloud overshadowed the city with the speed of an express train, and the darkness of the early evening. The darkness lasted but a few minutes, when the condition was relieved by lighter colored clouds from the north.

The winds ranged from 18 to 30 miles per hour from the south from midnight until 9.30 a. m., changing to southwest after that time and increasing in velocity to 40 miles per hour by 2 p. m. At 3.45 p. m. the winds shifted from southwest to northwest, with one minute from the west and immediately reached an extreme velocity of 74 miles per hour, with a maximum velocity for a 5-minute period of 54 miles per hour. At least a dozen houses and barns were blown down within the city, hundreds of trees were broken off or uprooted, and much damage done to both telephone and electric-light wires. A window in the Government building, 4 by 6 feet, was blown in and entirely across a room 20 feet wide. There was no evidence of a whirl, except as the wind shifted from the southwest to the northwest, and the greater number of trees and houses were blown due east or slightly to the northeast. The highest velocity of the wind as recorded on the tower of the Government building was from the northwest.

Temperature and pressure records indicate clearly the violence and rapidity of the changes. A temperature of 80° was recorded at 3.45 p. m., breaking the record for high temperature during any previous November in the last 25 years, and falling from 80° to 13° at midnight, which likewise breaks the record for low temperature this early in the month of November. Rain, hail, sleet, and snow fell within a period of less than two hours, and a moderate electric storm commenced after the temperature had fallen to below freezing and more than an hour after the wind had shifted.

The center of this disturbance probably passed somewhat to the north of this city, and there was an abnormally rapid rise in pressure from 29.3 inches at 3.45 p. m. of the 11th to 29.8 inches at 7 p. m.

The record for varieties of weather and violent fluctuations in meteorological elements during a 24-hour period has not heretofore been equaled at this station.